

Performance Verification of Animal Waste Treatment Technologies Through the U.S. Environmental Protection Agency's Environmental Technology Verification Program

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The U.S. EPA created the Environmental Technology Verification Program (ETV) to further environmental protection by accelerating the commercialization of new and innovative technology through independent performance verification and dissemination of high-quality data. The ETV works in partnership with recognized testing organizations and stakeholder groups representing buyers, vendor organizations, consulting engineers, and academic researchers and with federal, state, and local governments. NSF International, in cooperation with the U.S. EPA, manages the ETV's Water Quality Protection Center and collaborated with NCSU to conduct performance verification tests on three solids' separation technologies consisting of two inclined screens and a centrifuge designed for swine waste treatment. Swine production has received heightened attention both in North Carolina and nationally because of the industry's growth and the associated problems of waste management. Several problems related to treating solids in swine waste include the increased organic load placed on the treatment system, requiring larger overall capacities and lower usable volume because of settled solids accumulating on the bottom of the lagoon or treatment vessel. Efficient solids separation has been a desired part of a total waste treatment system not only for reducing system operating problems, but for reclaiming the nutrient-rich manure for beneficial use. Although these systems can reduce the amount of suspended solids entering treatment, they require time and attention to keep them operating properly and may be a factor in the appropriate selection of technology for this purpose. Performance verification testing was conducted at NCSU's Lake Wheeler Road Field Laboratory, which is a farm designed and operated as a research and teaching facility. Analytical parameters assessed during the verification tests included total, volatile, and suspended solids; total organic carbon; total Kjeldahl nitrogen; ammonia nitrogen; total and ortho-phosphorous; potassium; chloride; copper; zinc; nitrogen phosphorus potassium (NPK) ratio; pH, and conductivity.

The poster highlights the cooperation and responsibilities of the three organizations and the stakeholders in conducting the verification tests and preparing the subsequent ETV Program reports on these technologies, which are publicly available through the program's Web site.